FIG.1

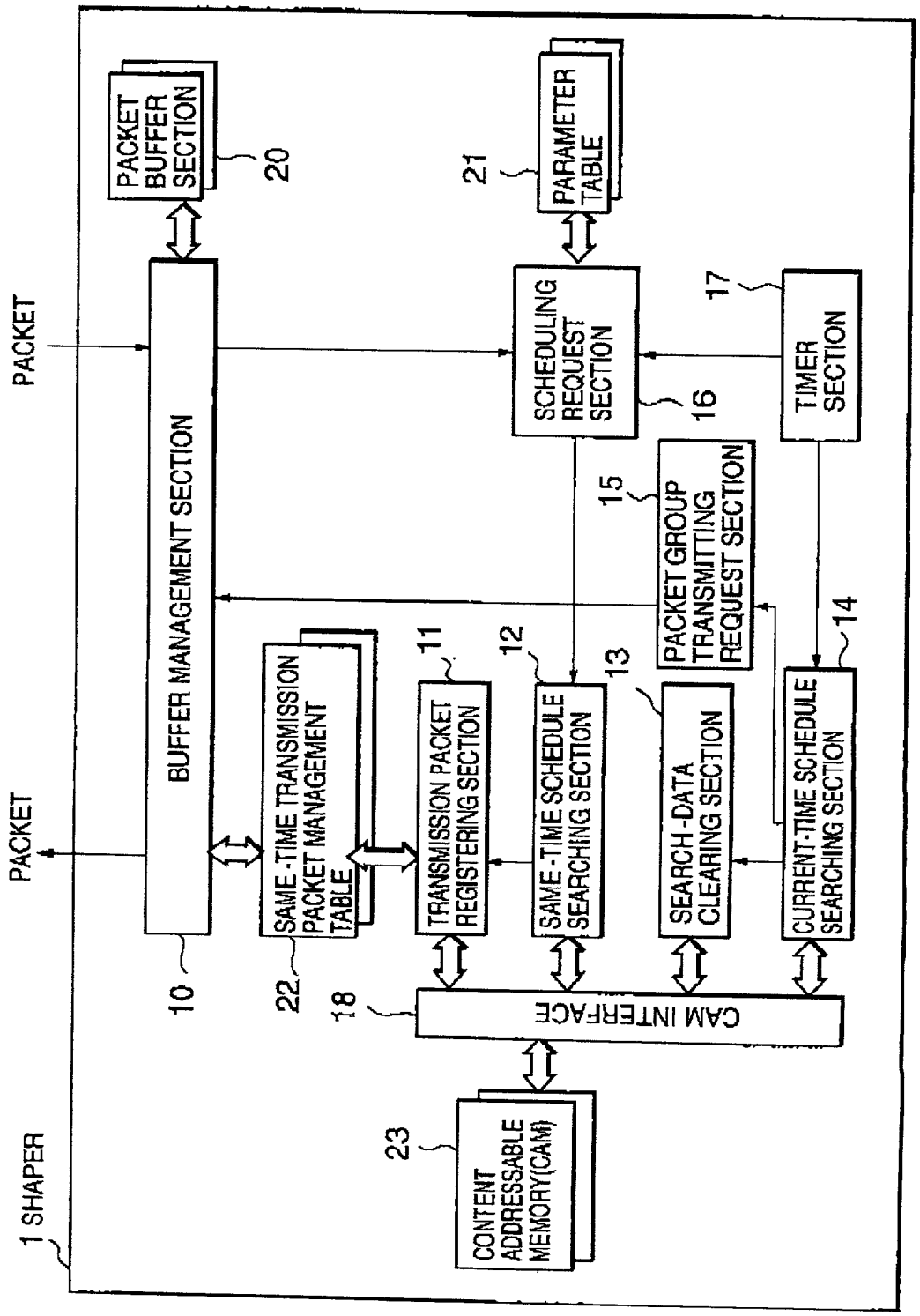

1 SHAPER
PACKET
PACKET
BUFFER MANAGEMENT SECTION
10
PACKET BUFFER SECTION
20
SAME-TIME TRANSMISSION PACKET MANAGEMENT TABLE
22
TRANSMISSION PACKET REGISTERING SECTION
11
SAME-TIME SCHEDULE SEARCHING SECTION
12
SEARCH-DATA CLEARING SECTION
13
CURRENT-TIME SCHEDULE SEARCHING SECTION
14
PACKET GROUP TRANSMITTING REQUEST SECTION
15
SCHEDULING REQUEST SECTION
16
PARAMETER TABLE
21
TIMER SECTION
17
CAM INTERFACE
18
CONTENT ADDRESSABLE MEMORY(CAM)
23

FIG.2

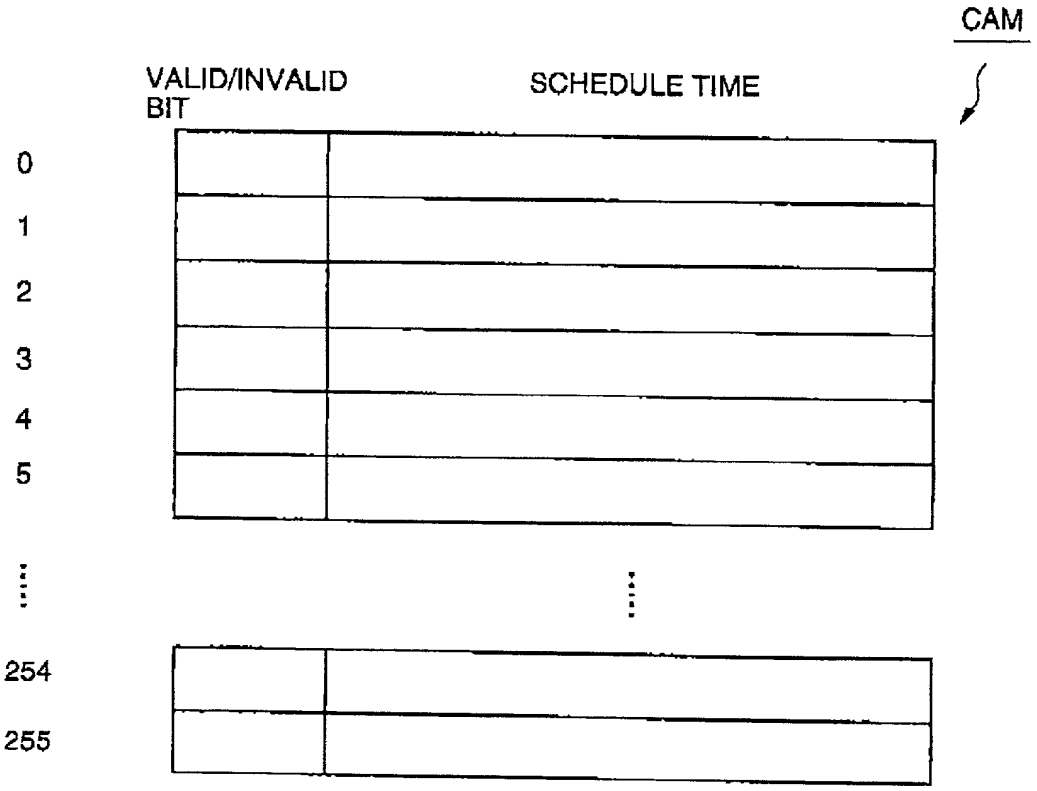


FIG.3

1ST LINK TABLE OF SAME-TIME TRANSMISSION PACKET MANAGEMENT TABLE

	EMPTY	TOP	TAIL
0			
1			
2			
3			
4			
5			
⋮			
254			
255			

FIG.4

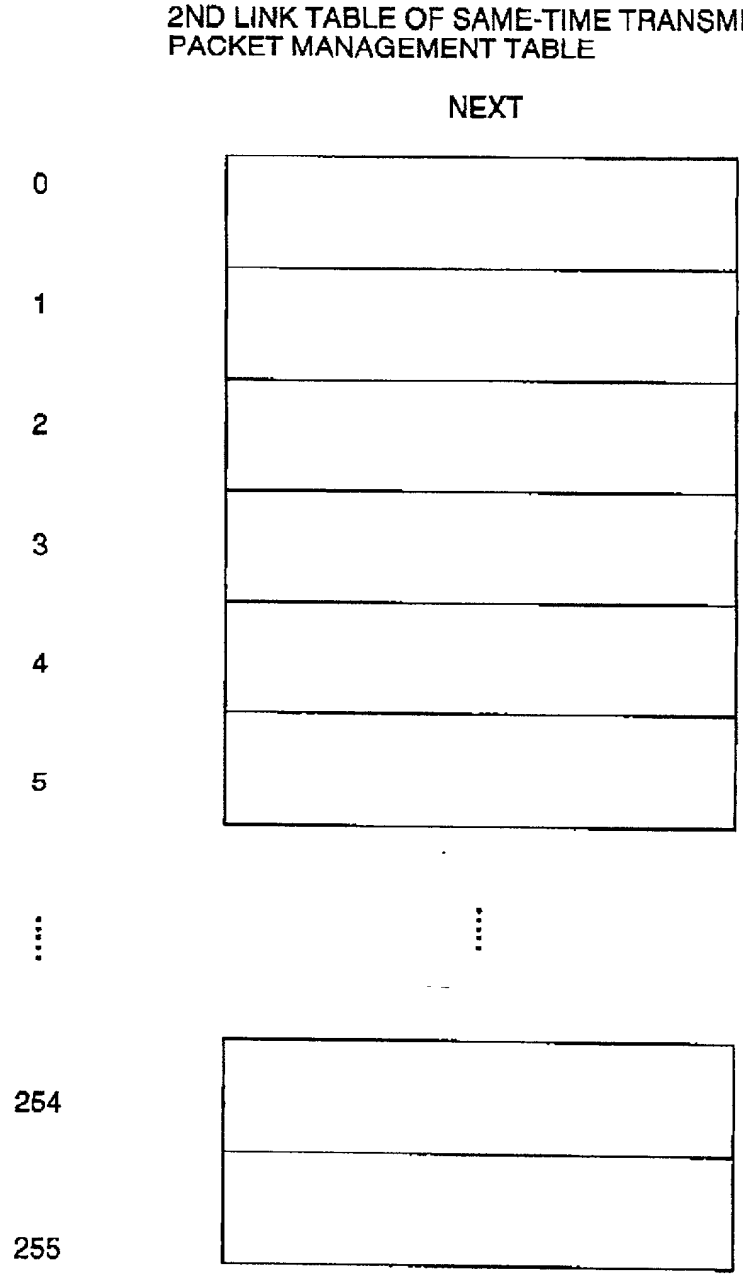

2ND LINK TABLE OF SAME-TIME TRANSMISSION PACKET MANAGEMENT TABLE
NEXT
0
1
2
3
4
5
254
255

FIG.5

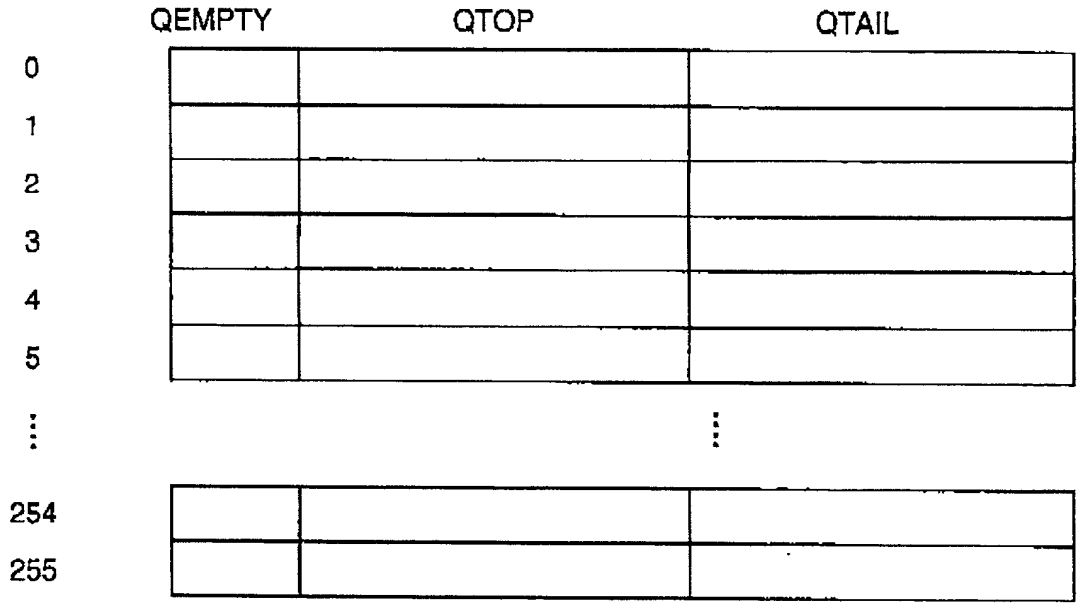


FIG.6

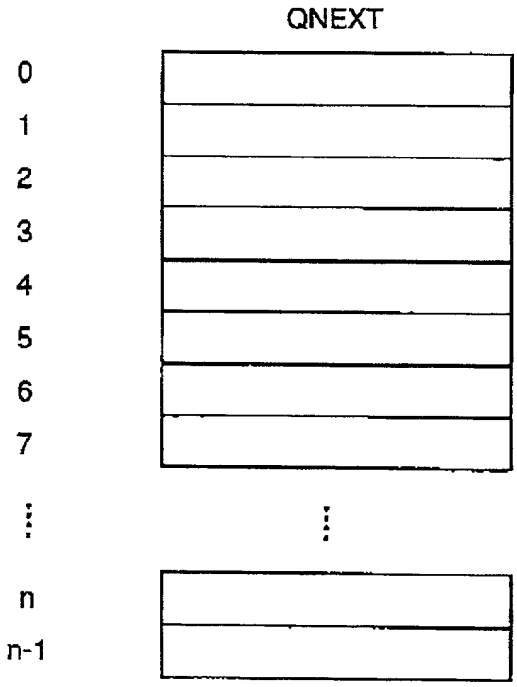


FIG.7

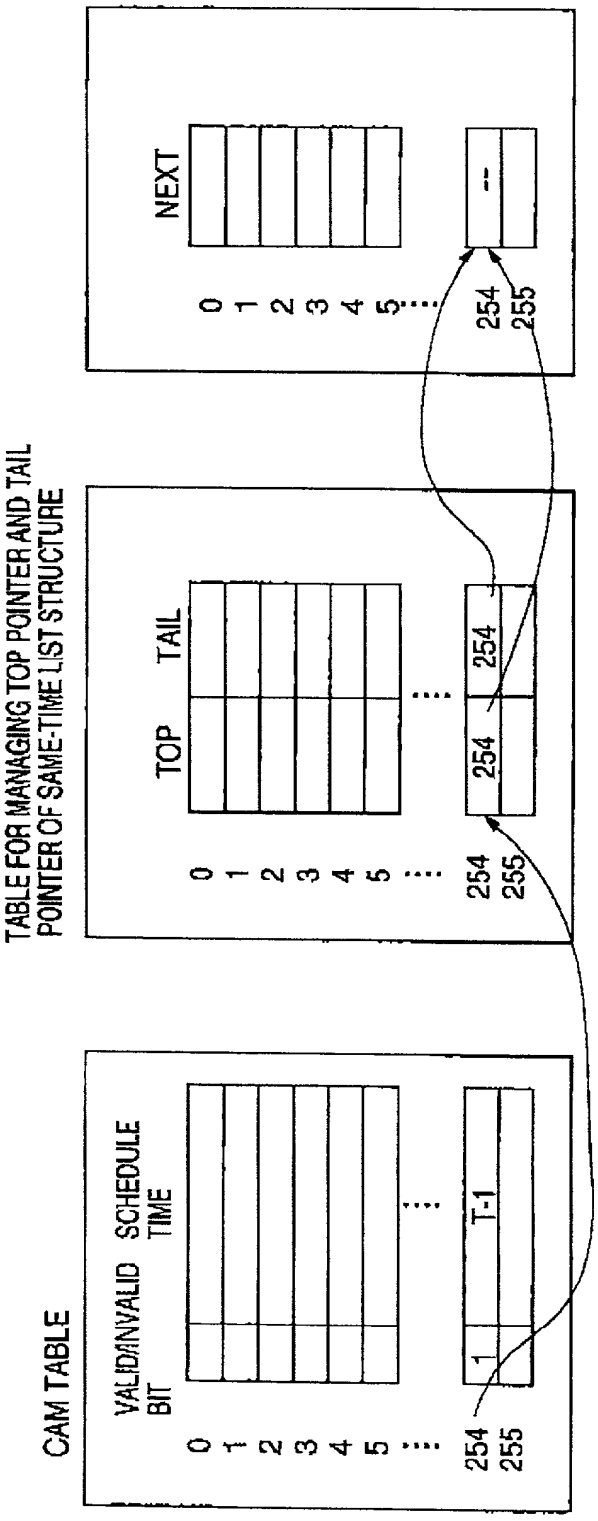

CAM TABLE
VALID/INVALID BIT
SCHEDULE TIME
0 1 2 3 4 5 ... 254 255
1
T-1
TABLE FOR MANAGING TOP POINTER AND TAIL POINTER OF SAME-TIME LIST STRUCTURE
TOP
TAIL
0 1 2 3 4 5 ... 254 255
254
254
254
NEXT
0 1 2 3 4 5 ... 254 255
--

FIG.8

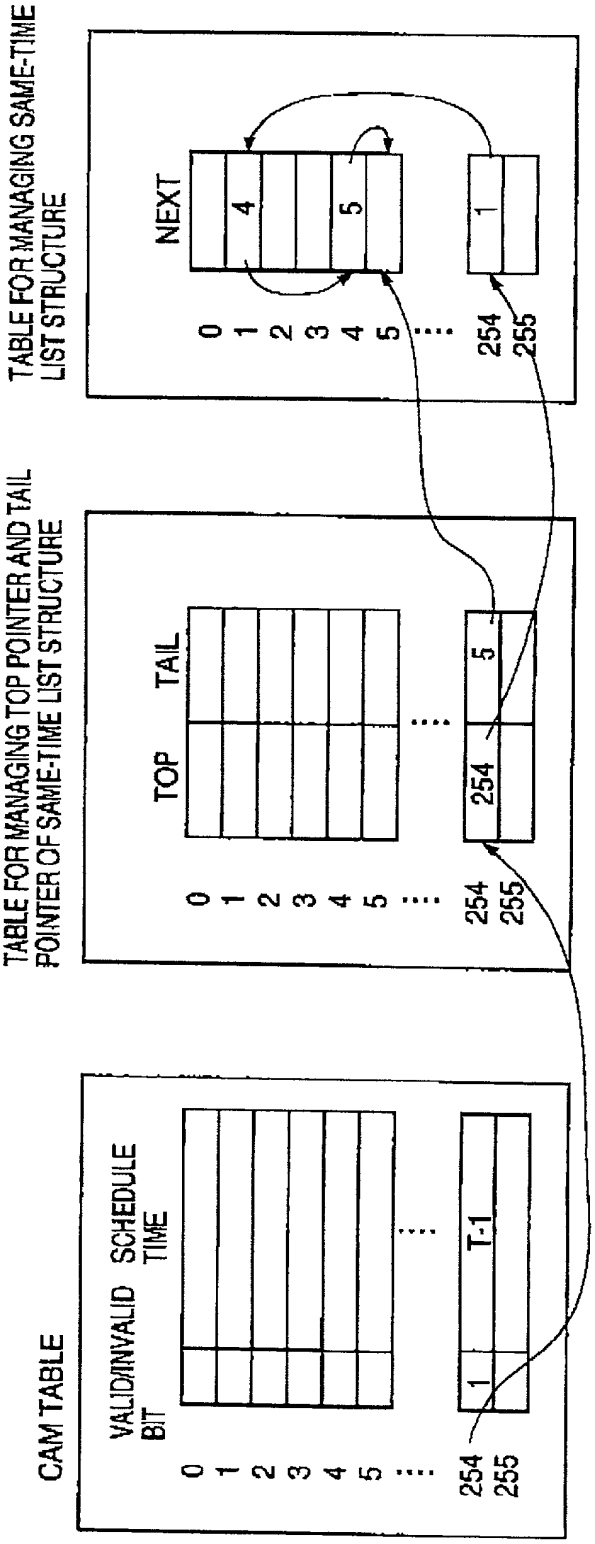

CAM TABLE
VALID/INVALID BIT
SCHEDULE TIME
0 1 2 3 4 5 ... 254 255
T-1
1
TABLE FOR MANAGING TOP POINTER AND TAIL POINTER OF SAME-TIME LIST STRUCTURE
TOP
TAIL
254
5
TABLE FOR MANAGING SAME-TIME LIST STRUCTURE
NEXT
4
5
1

FIG.9

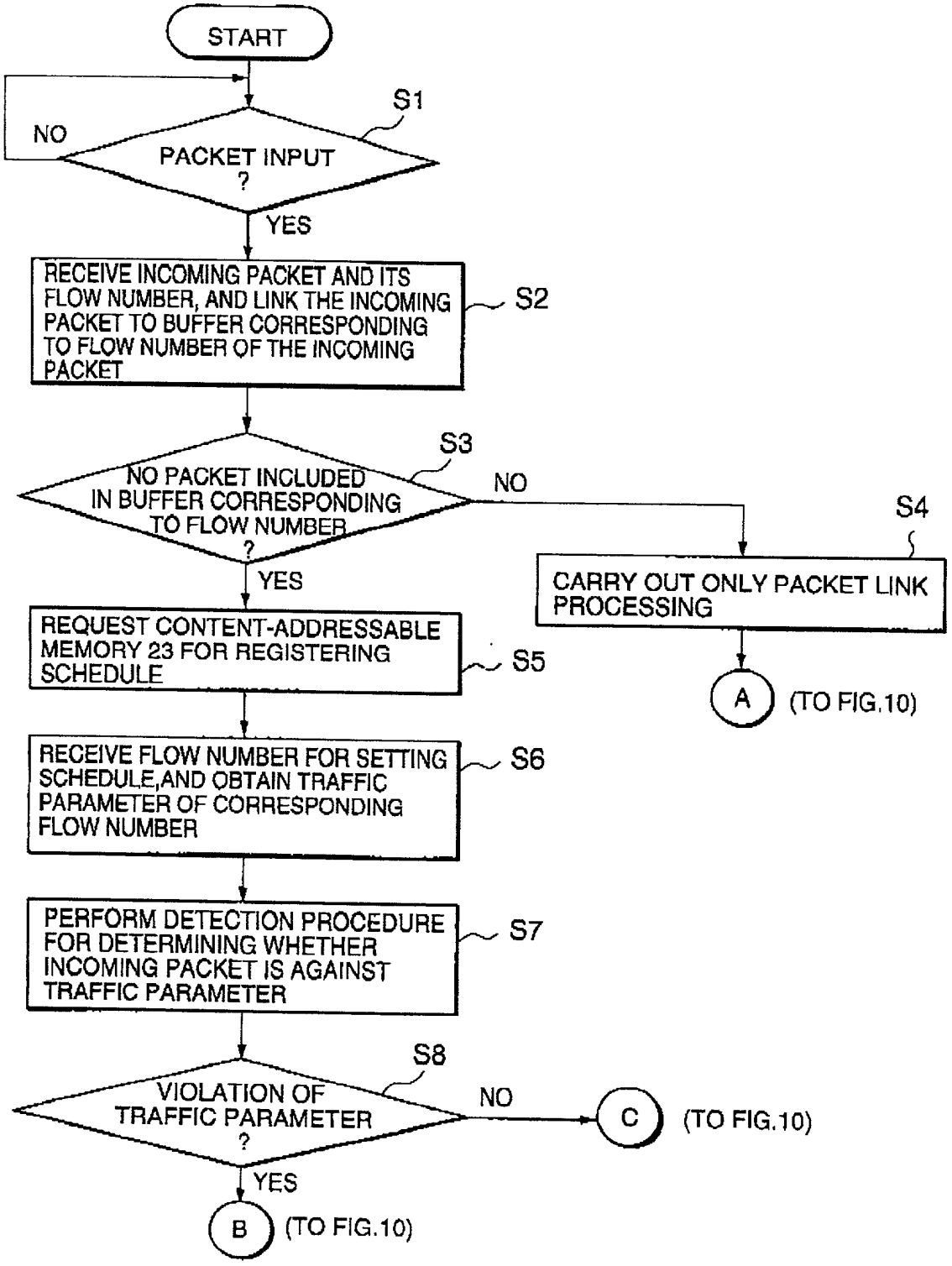

START
S1
NO
PACKET INPUT ?
YES
RECEIVE INCOMING PACKET AND ITS FLOW NUMBER, AND LINK THE INCOMING PACKET TO BUFFER CORRESPONDING TO FLOW NUMBER OF THE INCOMING PACKET
S2
S3
NO PACKET INCLUDED IN BUFFER CORRESPONDING TO FLOW NUMBER ?
NO
S4
CARRY OUT ONLY PACKET LINK PROCESSING
A
(TO FIG.10)
YES
REQUEST CONTENT-ADDRESSABLE MEMORY 23 FOR REGISTERING SCHEDULE
S5
RECEIVE FLOW NUMBER FOR SETTING SCHEDULE,AND OBTAIN TRAFFIC PARAMETER OF CORRESPONDING FLOW NUMBER
S6
PERFORM DETECTION PROCEDURE FOR DETERMINING WHETHER INCOMING PACKET IS AGAINST TRAFFIC PARAMETER
S7
S8
VIOLATION OF TRAFFIC PARAMETER ?
NO
C
(TO FIG.10)
YES
B
(TO FIG.10)

FIG.10

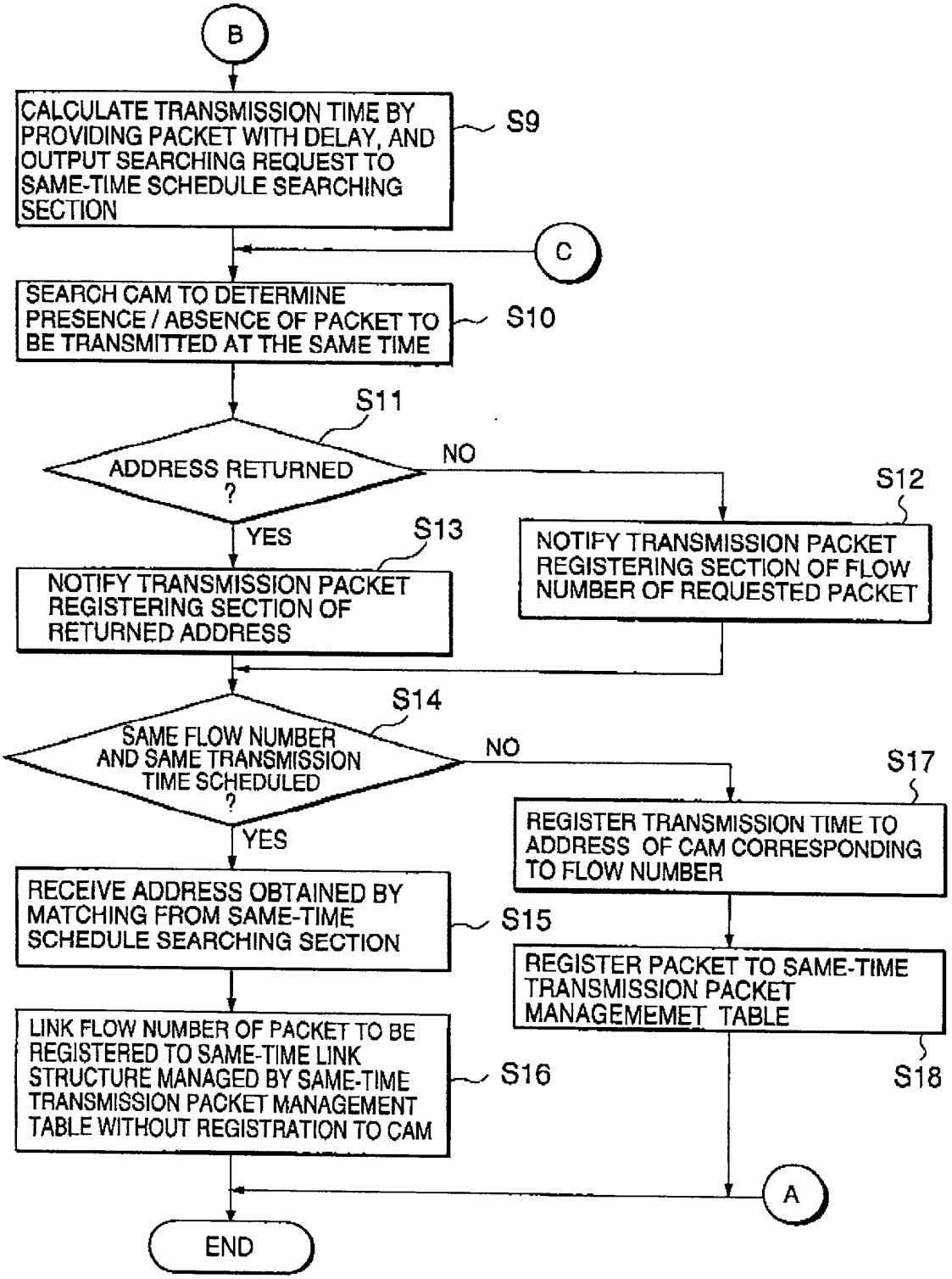

B
CALCULATE TRANSMISSION TIME BY PROVIDING PACKET WITH DELAY, AND OUTPUT SEARCHING REQUEST TO SAME-TIME SCHEDULE SEARCHING SECTION
S9
C
SEARCH CAM TO DETERMINE PRESENCE / ABSENCE OF PACKET TO BE TRANSMITTED AT THE SAME TIME
S10
S11
ADDRESS RETURNED ?
NO
S12
YES
S13
NOTIFY TRANSMISSION PACKET REGISTERING SECTION OF FLOW NUMBER OF REQUESTED PACKET
NOTIFY TRANSMISSION PACKET REGISTERING SECTION OF RETURNED ADDRESS
S14
SAME FLOW NUMBER AND SAME TRANSMISSION TIME SCHEDULED ?
NO
S17
YES
REGISTER TRANSMISSION TIME TO ADDRESS OF CAM CORRESPONDING TO FLOW NUMBER
RECEIVE ADDRESS OBTAINED BY MATCHING FROM SAME-TIME SCHEDULE SEARCHING SECTION
S15
REGISTER PACKET TO SAME-TIME TRANSMISSION PACKET MANAGEMEMET TABLE
LINK FLOW NUMBER OF PACKET TO BE REGISTERED TO SAME-TIME LINK STRUCTURE MANAGED BY SAME-TIME TRANSMISSION PACKET MANAGEMENT TABLE WITHOUT REGISTRATION TO CAM
S16
S18
A
END

FIG.11

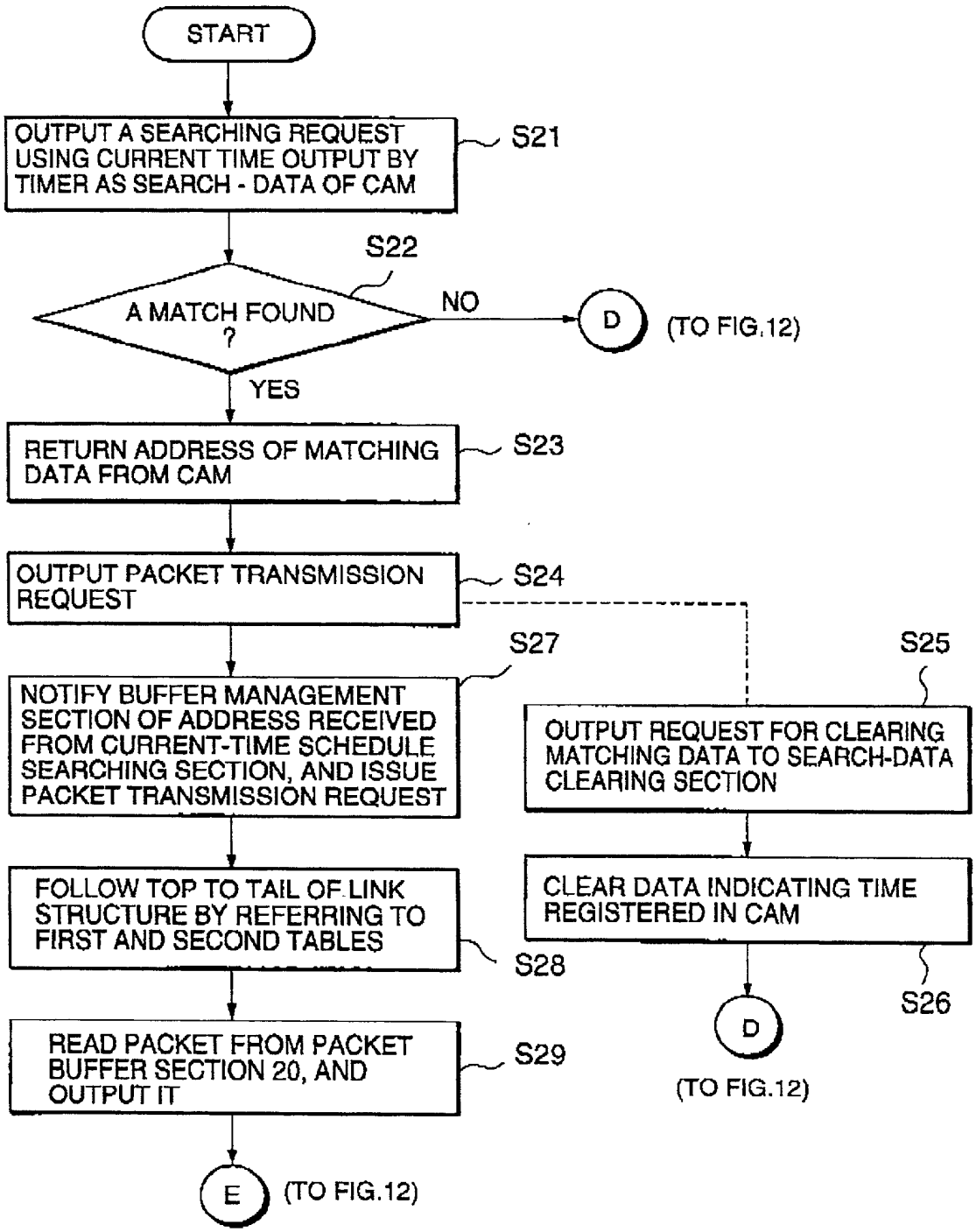
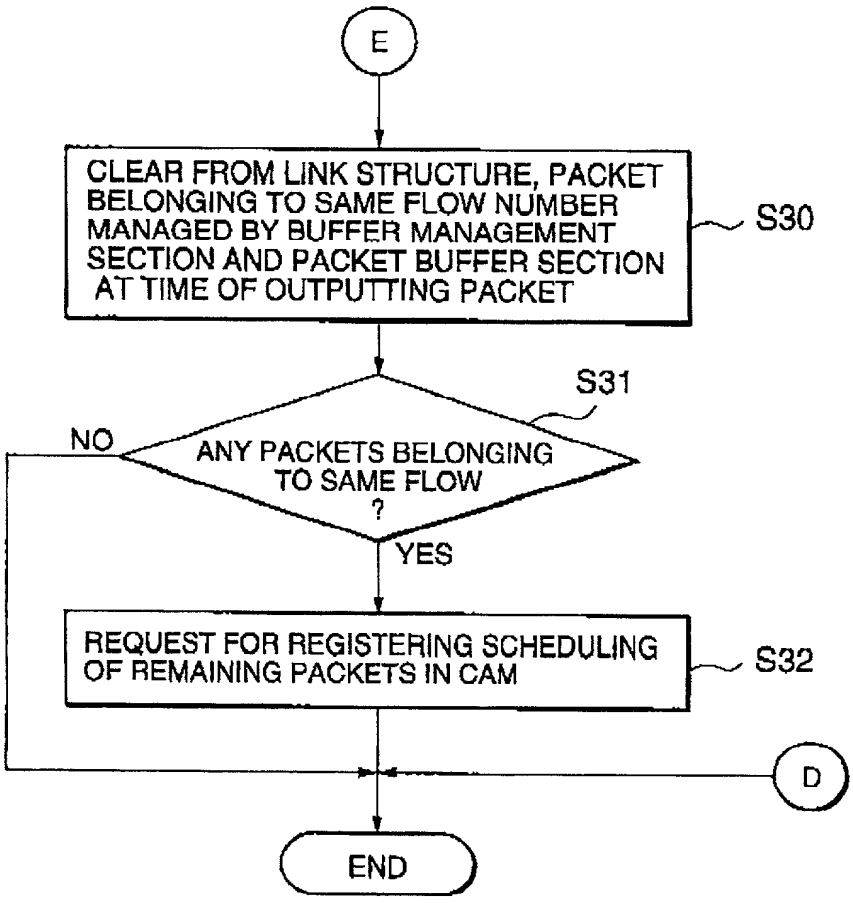

START
OUTPUT A SEARCHING REQUEST USING CURRENT TIME OUTPUT BY TIMER AS SEARCH - DATA OF CAM
S21
S22
A MATCH FOUND ?
NO
D
(TO FIG.12)
YES
RETURN ADDRESS OF MATCHING DATA FROM CAM
S23
OUTPUT PACKET TRANSMISSION REQUEST
S24
S27
NOTIFY BUFFER MANAGEMENT SECTION OF ADDRESS RECEIVED FROM CURRENT-TIME SCHEDULE SEARCHING SECTION, AND ISSUE PACKET TRANSMISSION REQUEST
S25
OUTPUT REQUEST FOR CLEARING MATCHING DATA TO SEARCH-DATA CLEARING SECTION
FOLLOW TOP TO TAIL OF LINK STRUCTURE BY REFERRING TO FIRST AND SECOND TABLES
S28
CLEAR DATA INDICATING TIME REGISTERED IN CAM
S26
D
(TO FIG.12)
READ PACKET FROM PACKET BUFFER SECTION 20, AND OUTPUT IT
S29
E
(TO FIG.12)

FIG.12


E
CLEAR FROM LINK STRUCTURE, PACKET BELONGING TO SAME FLOW NUMBER MANAGED BY BUFFER MANAGEMENT SECTION AND PACKET BUFFER SECTION AT TIME OF OUTPUTTING PACKET
S30
S31
NO
ANY PACKETS BELONGING TO SAME FLOW ?
YES
REQUEST FOR REGISTERING SCHEDULING OF REMAINING PACKETS IN CAM
S32
D
END